HSLZUID

Visitors Centre HSL-A4

US-Dutch Technical Exchange, LACPR Project

Introduced by

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A

Ministry of Transport

project

Publicly and privately funded

HSL-Zuid – Brief Justification

- Improved mobility access in general.

- Maintaining/improving the Netherlands' competitive position within Europe.

- Most mobility access problems occur in the western area of Netherlands, and between that area and neighbouring countries.

- The travelling public must have access to the best possible public transport product; fares must be as competitive as realistically possible.

- Motorists and air travellers must rethink their way of getting from A to B, as high speed trains are / will be a realistic alternative.

- HSL-Zuid assumes an essential role in the improvement of the chain mobility, focussing on:

- high speed -

Time Frame

1991 – Publication of initial Key Planning Decision
– Project Organisation HSL-Zuid instituted

1994 – Reviewed Key Planning Decision

Mid 1997 – Consent by both Houses of Parliament
– Final Cabinet decision

11/1997 – Publication (public viewing) Preliminary Route Decision

April 1998 – Publication (public viewing) Final Route Decision
(Formal objections to be filed with “Council of State”
within 6 weeks)

1999/2000 – New / amended district schemes implemented

April 2000 – Commencement construction

Stations of call

in Netherlands:

- Amsterdam

- Schiphol

- Rotterdam

And also:

- The Hague

- Breda

HSL-Zuid – Track use in Netherlands

Conventional Domestic Track

Amsterdam–Hoofddorp	22,3 km. *
Rotterdam–Barendrecht	7,0 km. *
The Hague–Rotterdam (via Delft/Schiedam)	21,8 km. *

* - Operational speed upto 160 k.p.h.;
- 1.5 kV DC;
- ATB safety system.

New High Speed track

Hoofddorp–Rotterdam	48,0 km. **
Barendrecht–Dutch-Belgian border	47,6 km. **

** - Operational speed upto 300 k.p.h.;
- 25 kV (50 Hz) AC;
- ETCS safety system

Nearly 100 kms of high speed track …
170 civil constructions …

No-recess (pile supported) concrete slabs;

motor traffic and rail overbridges, aqueduct, viaducts;

bored tunnel, submersed tunnels, “cut-’n-cover”-tunnels;

(semi)recessed open concrete lined cuttings;

fly-overs, dive-unders;

eco tunnels/culverts, etc.

An overview …

HSL-Zuid --

Only 6 kms on ballast bed.

55 kms on overbridges, overpasses, in tunnels, concrete lined cuttings etc.

35 kms on no-recess (“settlement free”) concrete slabs.

No-recess (“settlement free”) concrete slabs

Driving piles, applying rebar …

Pouring concrete

Levelling

Completed “sub structure”

HSL-Zuid on settlement free pile supported concrete slabs …

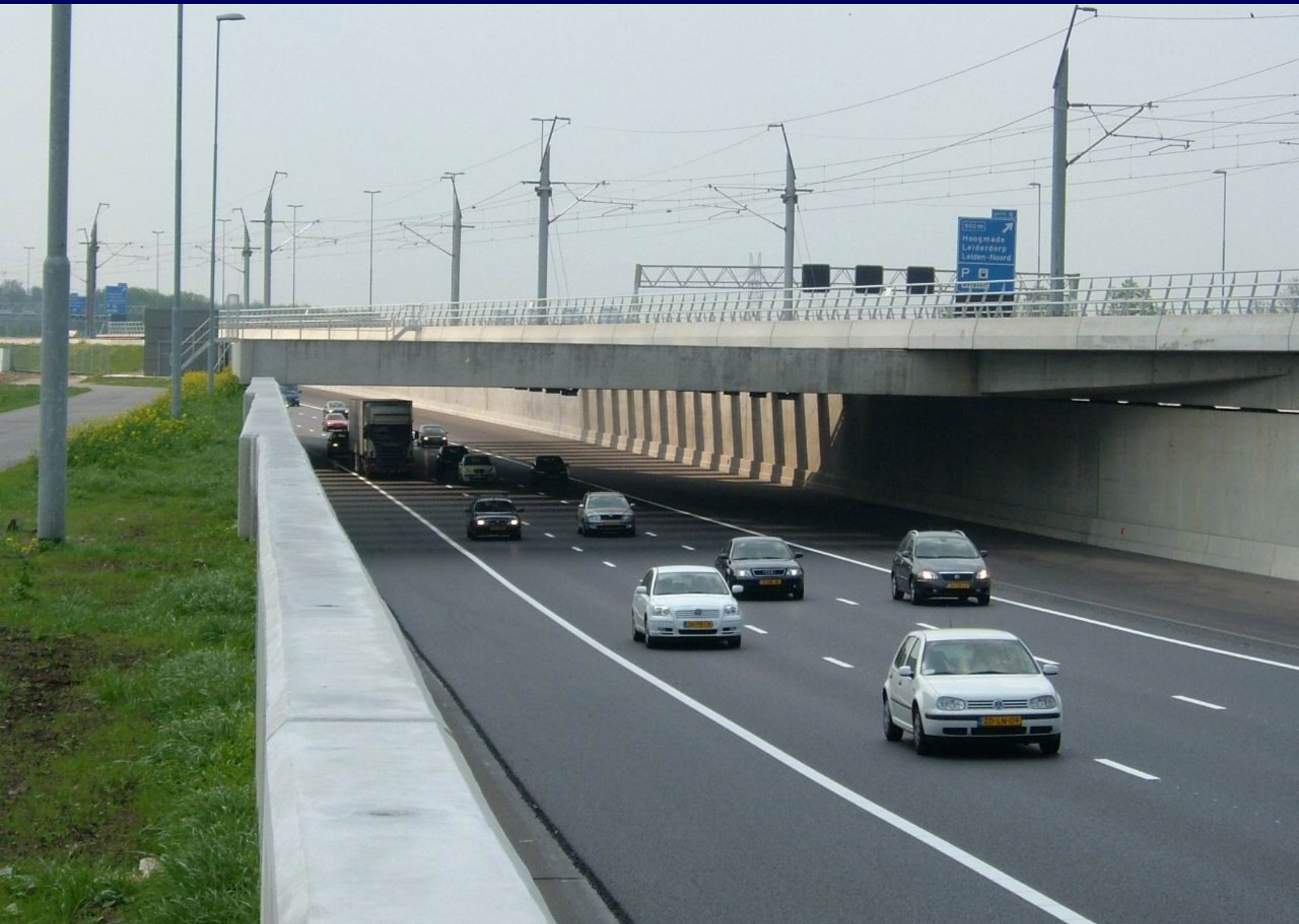
HSL-Zuid underpassing canal in aqueduct tunnel

Combined HSL-Zuid construction and A4 Freeway widening (1)

Combined HSL-Zuid construction and A4 Freeway widening (2)

A4 Freeway in concrete lined cutting underpassing HSL-Zuid (1)

A4 Freeway in concrete lined cutting underpassing HSL-Zuid (2)

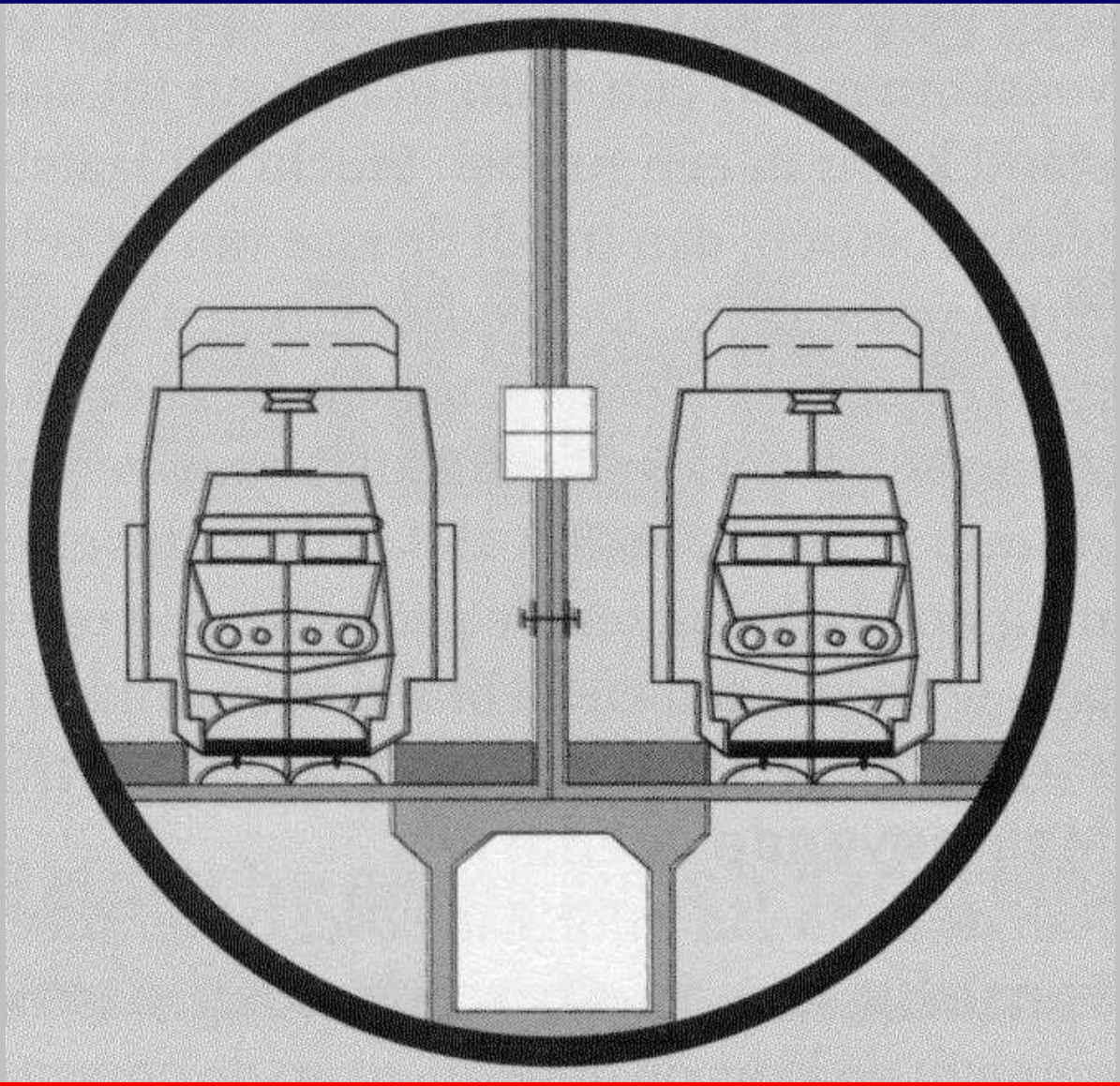


Bored tunnel

in central Holland protected green area

Single tube tunnel, with dividing wall.

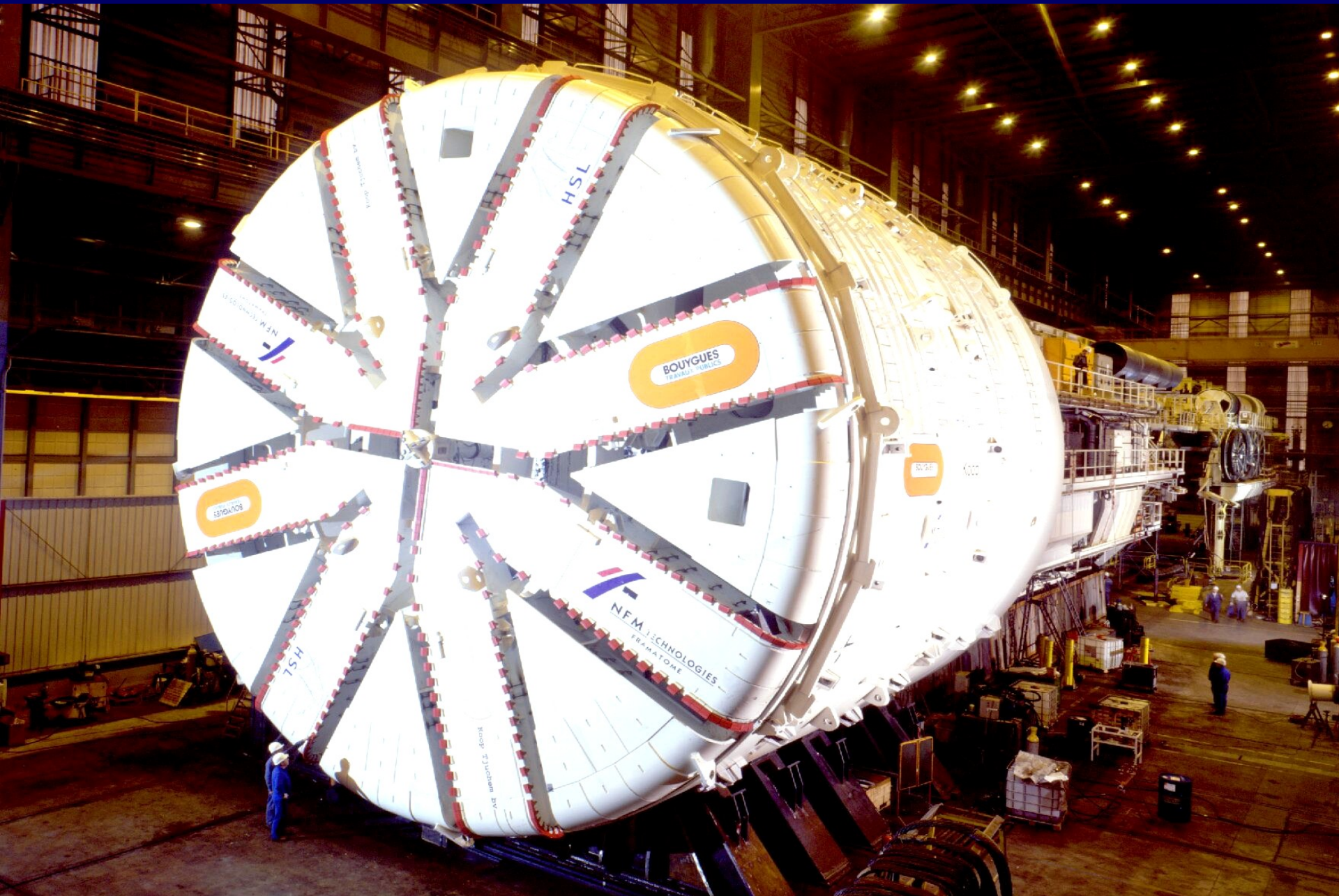
Bored section 7155 m. -- Total tunnel length incl. ramps 8620 m.

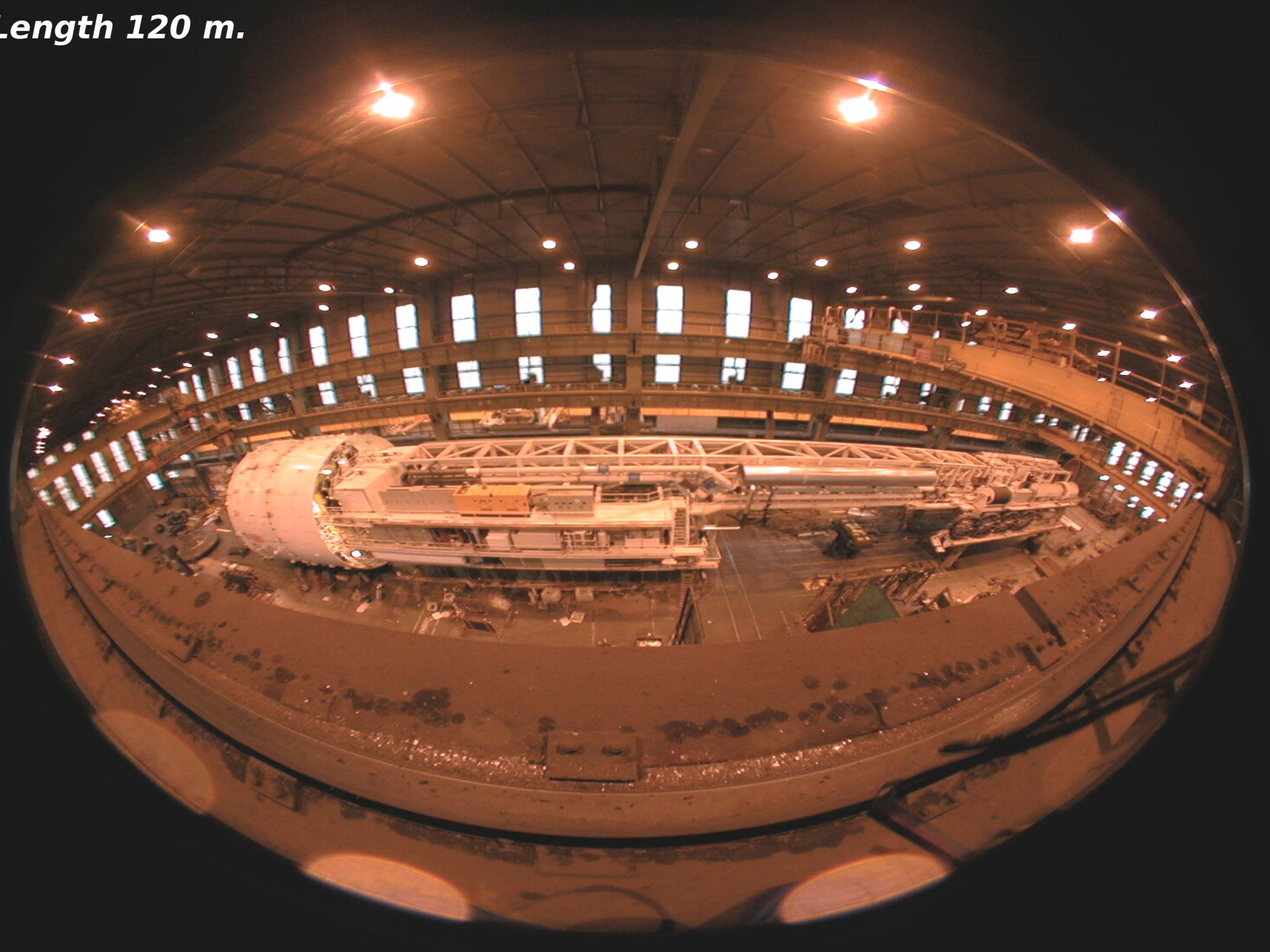


Maximum tunnel depth: 35 m.

TBM AURORA

Length 120 m. -- Diameter 15 m. -- Weight 3.300.000 kgs.

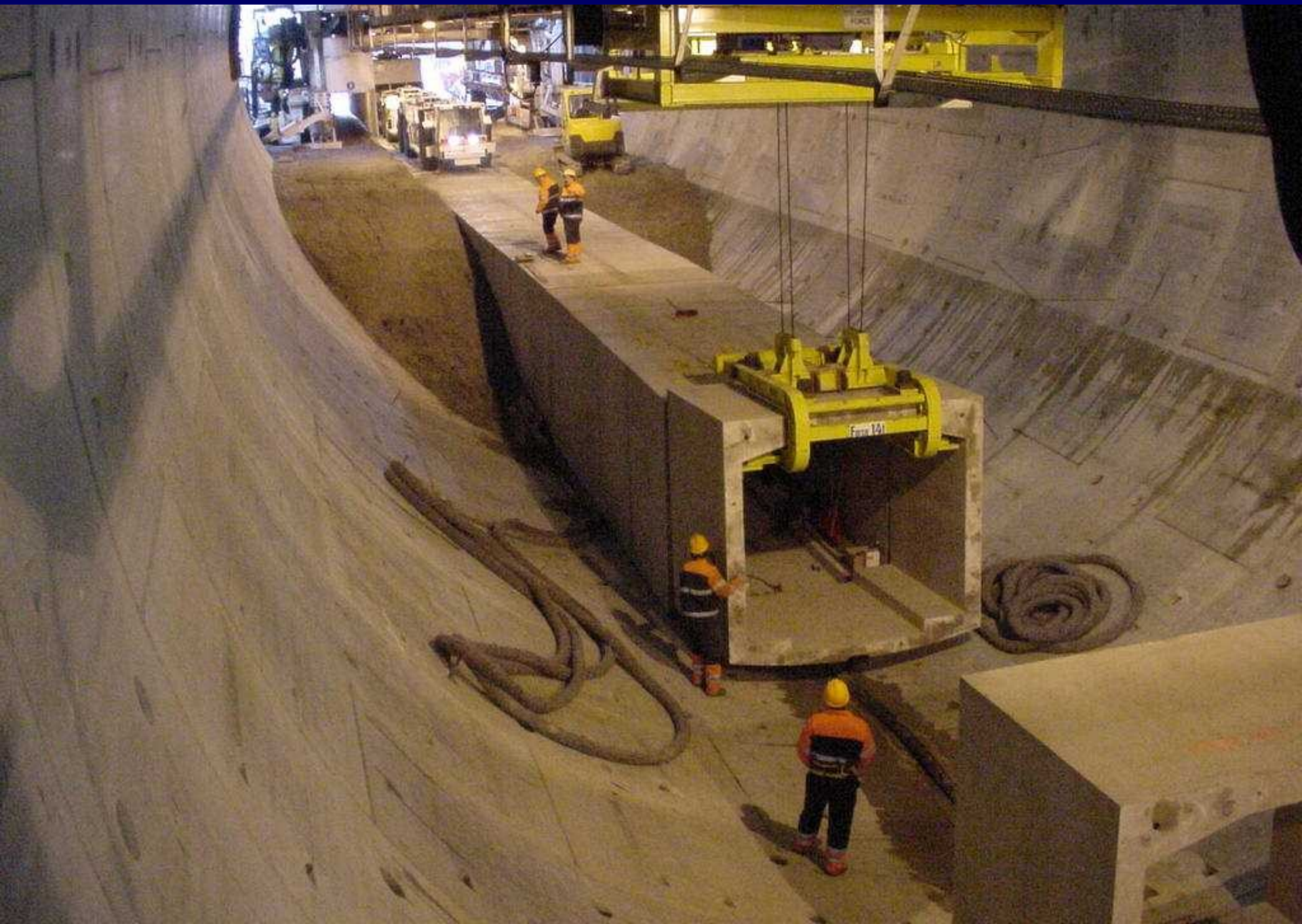



Length 120 m.

Tunnel lining segments and technical gallery element

Positioning of tunnel lining segment

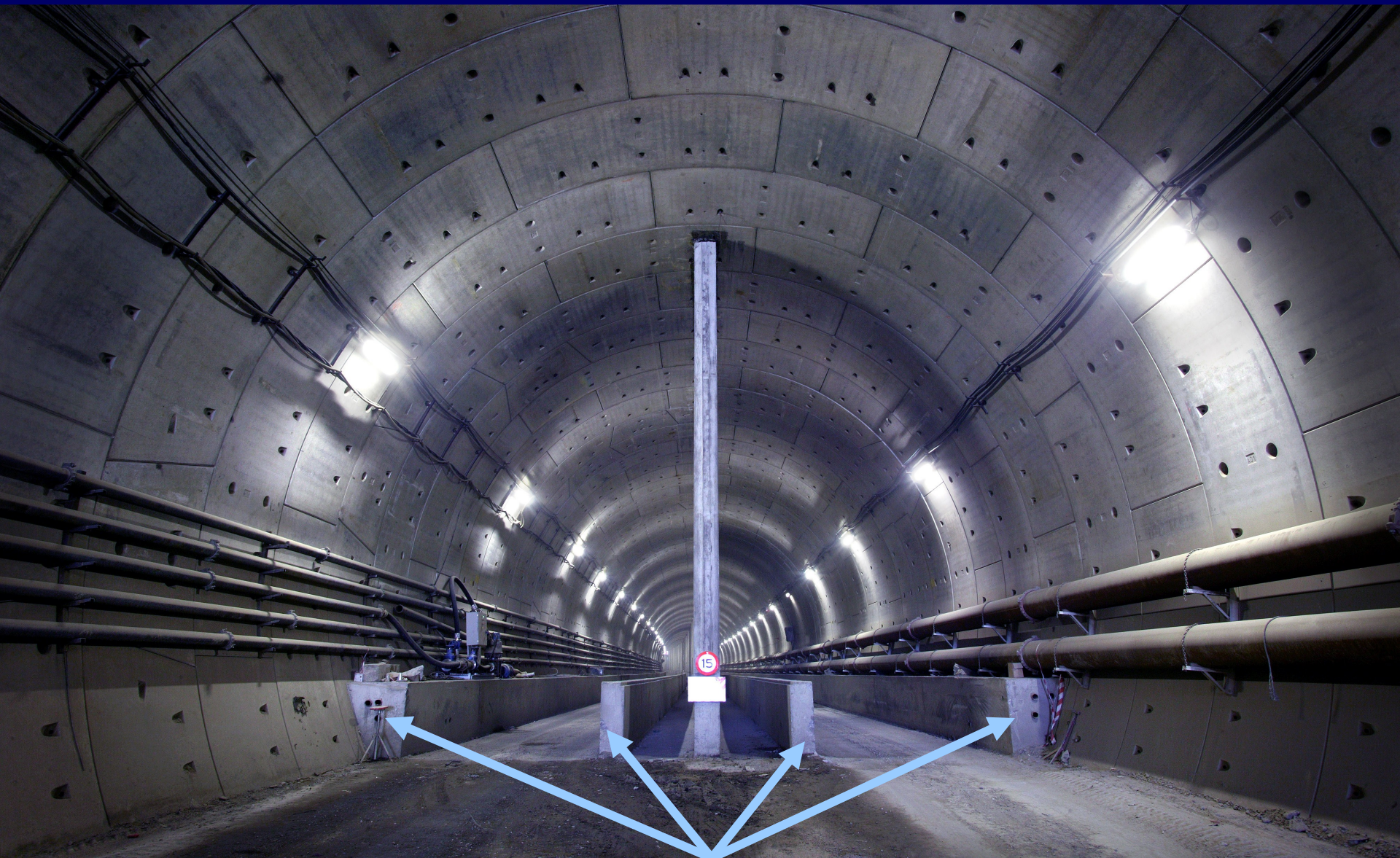
Positioning of technical gallery element



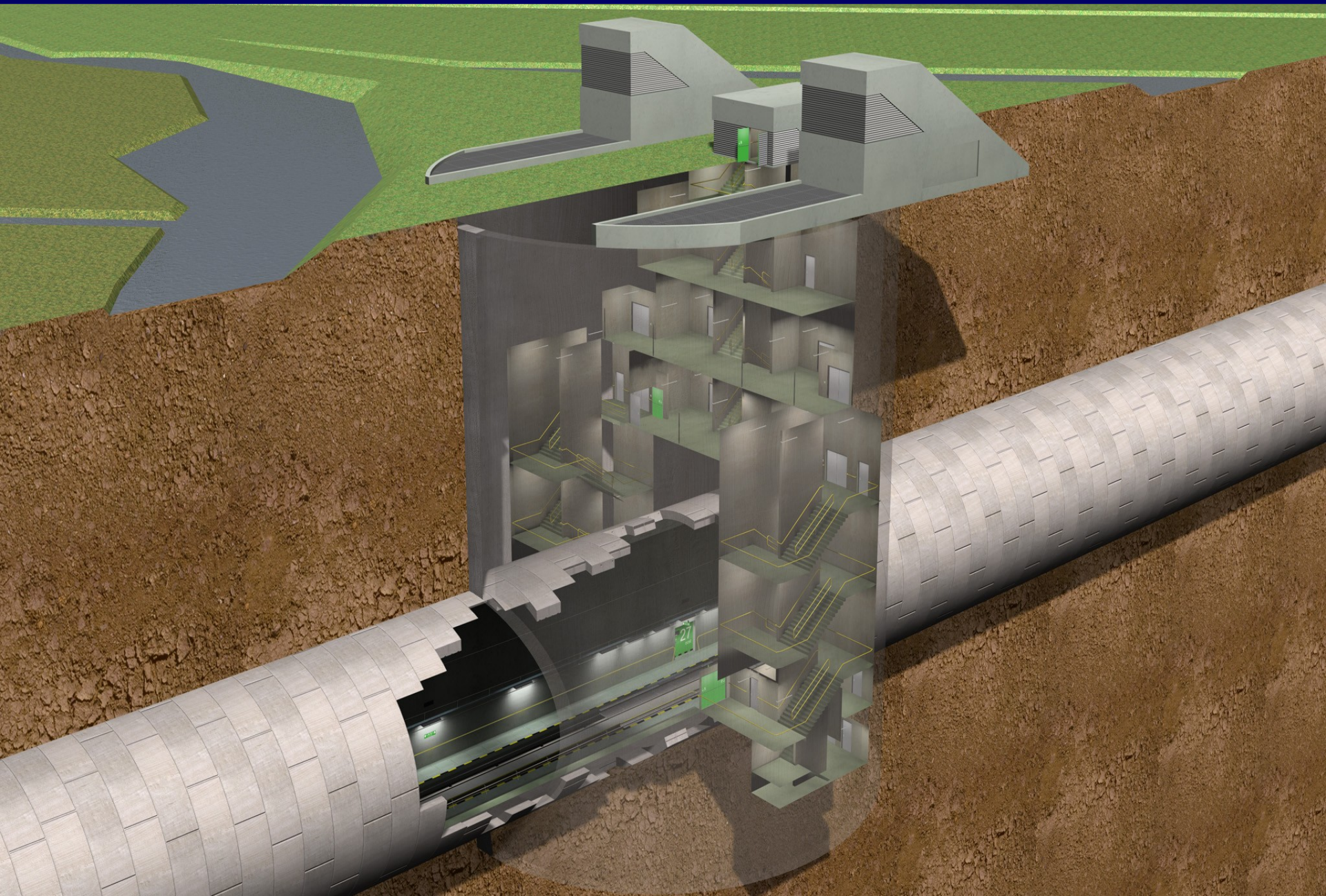
Dividing wall creates two tunnels halves.

This wall separates the air pressure caused by speeding trains;
It also plays an essential role in the safety of passengers and train

The low erect walls serve as derailment guiding barriers



Maintenance, air pressure relief and evacuation shaft



It dawns on TBM “Aurora”

HSL-Zuid on elevated settlement free slabs, respectively overcrossing A12 Freeway and The Hague – Utrecht Railway LIne

HSL-Zuid on 6 kms. long viaduct traversing large green house horticultural area

HSL-Zuid in concrete lined cutting traversing (future) housing estate area.

Construction of cut and cover tunnel, north of Rotterdam City (1)

HSL-Zuid in cut and cover tunnel north of Rotterdam City (2)

HSL-Zuid leaveing cut and cover tunnel and overcrossing freeway and canal

Multiple dive unders / fly overs near Rotterdam Central station

Change over of track use.
(In Netherlands trains use right hand track, in Belgium left hand track.)

Fly over to accommodate change of track use

Submersed Oude Maas River Tunnel

Tunnel segment construction dock …

Tunnel segment construction

Applying removable lads to enable tunnel segments to float

Preparing construction dock for inundation

Inundating the dock

Tunnel segment on its way

Positioning of tunnel segments

Northern entrance Oude Maas River Tunnel

One of two flood water stop doors Oude Maas River Tunnel.
(The northern entrance cuts through the primary river stop bank.)

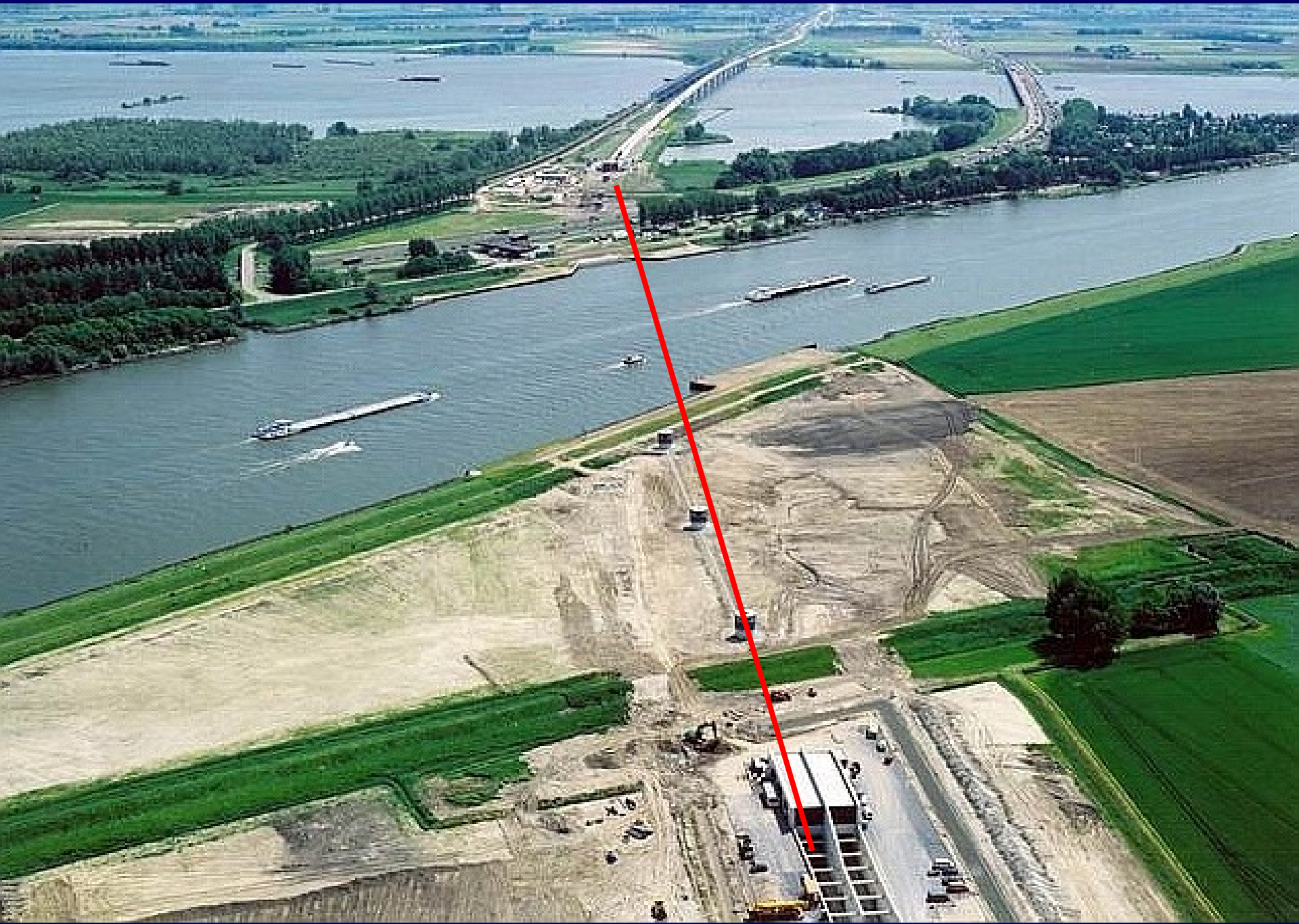
Close up of one of the tunnel air pressure exhausts

One of two secundary stop bank cuttings (1)

One of two secundary stop bank cuttings (2)

Flood barrier doors in secundary dike cutting

Submersed Dordtsche Kil River Tunnel



HSL-Zuid Hollandsch Diep Bridge taking shape (1)

HSL-Zuid Hollandsch Diep Bridge taking shape (2)

Hollandsch Diep Bridge taking shape (3)

The completed HSL-Zuid Hollandsch Diep Bridge …

Hollandsch Diep Bridge at night …

HSL-Zuid “pergola” crossing of domestic railway line

Four newly constructed river crossing bridges, respectively accommodating A16 Freeway, HSL-Zuid and domestic railway

Re-aligned and widened A16 Freeway

Concrete lined cuttings in Breda City accommodating A16 Freeway and HSL-Zuid

Inside HSL-Zuid cutting. Concrete walls are lined with acoustic tiles.

HSL-Zuid undercrossing of freeway junction in concrete lined cutting

The Superstructure DBFM Contract

On completion of all civil works, the superstructure (tracks, power supply, catenary system, sound barriers, safety and communications systems) have been put into place by

On completion of the superstructure and the issuing of the *Certificate of Availability*, InfraSpeed will maintain the entire HSL-Zuid (super- and sub-structures) over a 25-year period.

The Government of Netherlands will compensate Infraspeed by way of a performance related "availability allowance".

Track Construction:

Rheda 2000 system

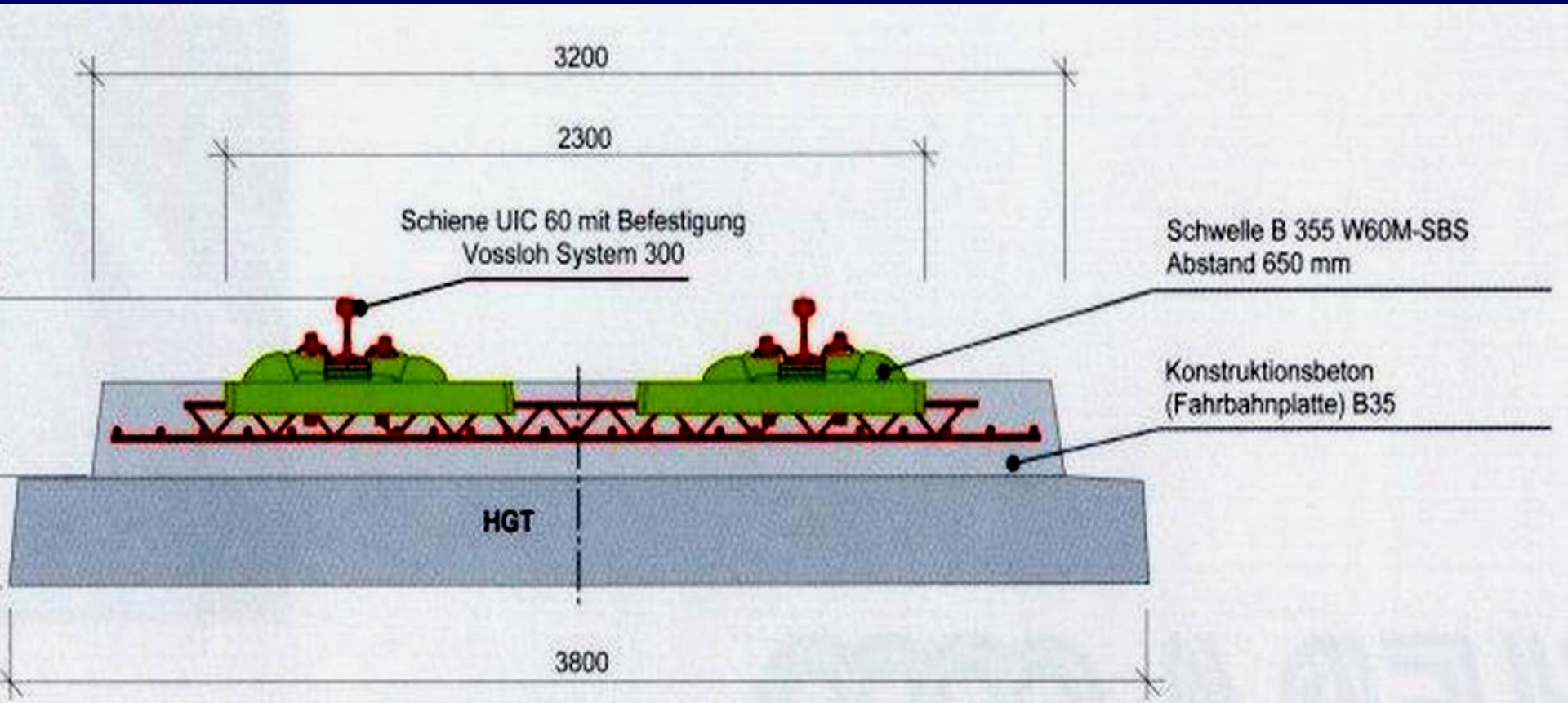
HSL

ZIDD

Rheda 2000 *track construction*

Rheda 2000 is a <u>ballastless</u> sleeper system, initially implemented by Deutsche Bahn as early as 1972, near Rheda (Germany) railway station.

The rail frame work is adjusted over the substructure and subsequently embedded in concrete.



Noise reducing metal is applied in between and to the sides of the settlement free pile supported concrete slabs

Synthetic felt layer is applied

Postioning of bore holes

9-hole bore

Positioning of longtitudal rebar, dowels and railway sleepers

Positioning of construction rails in spindle bolts

Completed rail framework

Close up of spindle bolt

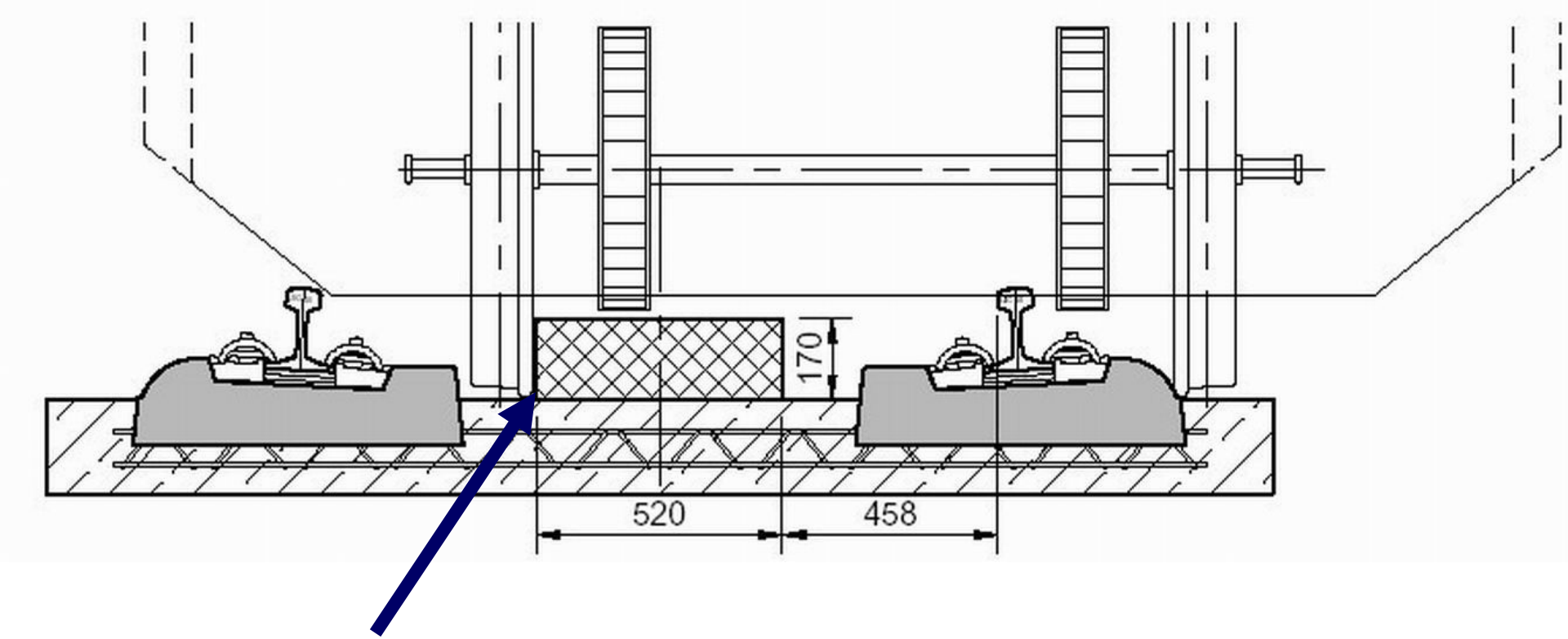
Checking of vertical alignement prior to concreting

Concreting

Contruction rails, conrete casing and spindles removed …

Positioning of long rails (120 metres a piece)

Rebar for derailment guidance plinth


170
520
458

Example of mandatory noise reduction screens

Transportation –

Services and Rolling Stock

The 15-year concession for transportation on HSL-Zuid was won by

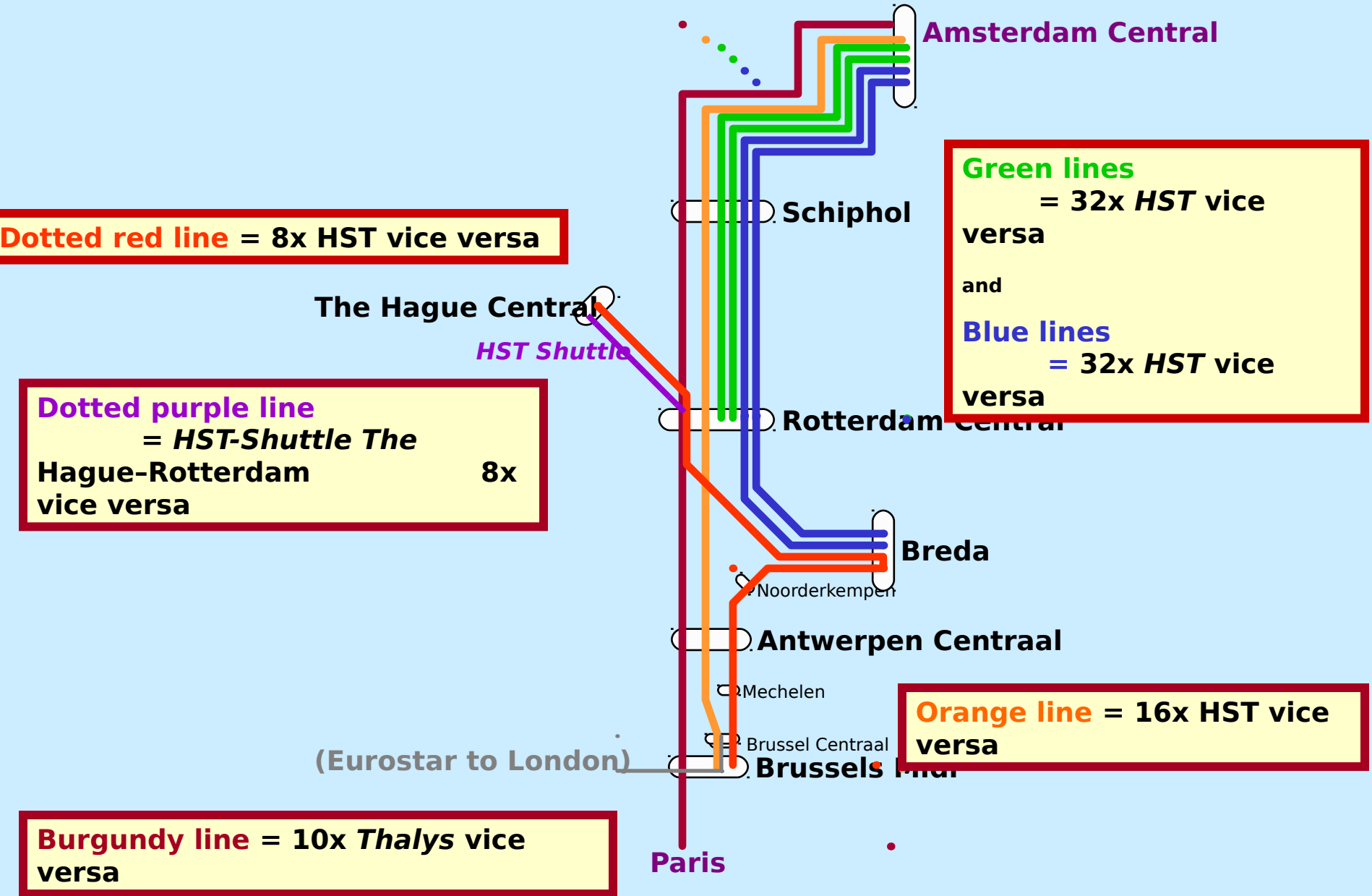
HSA
HIGH SPEED ALLIANCE

(KLM Royal Dutch Airlines and Dutch Railways Passenger Division)

HSA will be paying an annual fee for the exclusive use of HSL-Zuid.

***Penalties* may be added**
if HSA fail to fully comply with the terms of the concession.

HSL-Zuid services in 2010 (Source: HSA)



TGV Thalys on the Amsterdam – Paris service

Source:

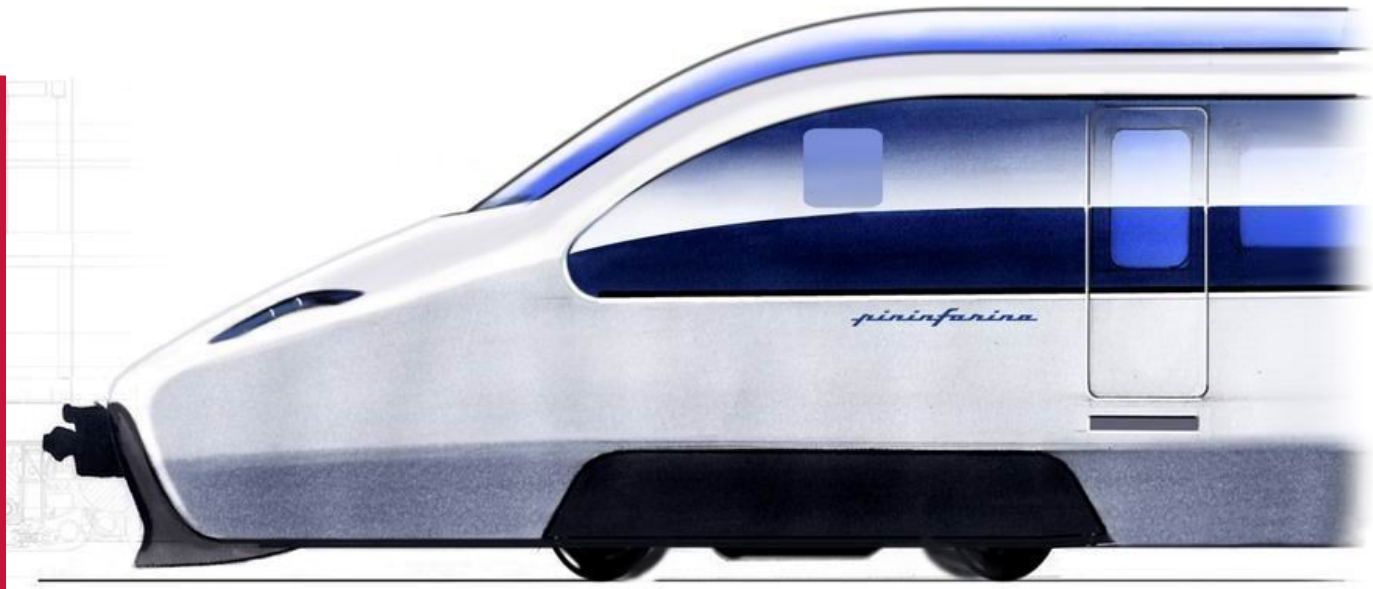
HSA
HIGH SPEED ALLIANCE

"Artist Impression" of the V250 rolling stock presently under construction

- Den Haag – Breda – Brussel - Amsterdam – Brussel - Amsterdam – Breda

-

- Amsterdam – Rotterdam



These units will feature different colours than suggested here

Source:

Photographs and visuals kindly made available by:

Stafafdeling Communicatie Directie HSL-Zuid
De Projectbureaus HSL-Zuid

De aannemersconsortia HSL-Zuid –

Hollandse Meren *-- Tracédeel vanaf Hoofddorp tot Boortunnel (incl. A4)* ***Bouygues/Koop*** *-- Tracédeel Boortunnel*

Hollands Midden *-- Tracédeel vanaf Boortunnel tot Rotterdam* ***Drechtse Steden*** *-- Tracédeel vanaf Barendrecht t/m Hollandsch Diep*

Brabant Noord *-- Tracédeel vanaf Moerdijk tot Prinsenbeek (incl. A16)* ***Brabant Zuid*** *-- Tracédeel vanaf Prinsenbeek tot België (incl.A16/A58)* ***InfraRail*** *-- Railaansluitingen met regulier spoor* ***InfraSpeed*** *-- De "bovenbouw"*

Hans Volkers *Kiss* ***High Speed Alliance*** *-- De stelconnen* **Hans Postelmans** **Ton Poortvliet**

Ton Borsboom **Paul Attard**
Peter Honig **Dirk Fortuyn**
Michiel van Ballegoijen de Jong

Fred Beijerling

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